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| **Lesson Plan:** |

**Prescribed learning outcomes**

**B2** use ray diagrams to analyse situations in which light reflects from plane and curved mirrors

**B3** analyse situations in which light is refracted

**Big Ideas**

1. Waves transfer energy via oscillations of particles in the medium. Matter does not transfer.
2. Decouple displacement-position vs. displacement-time graphs and use these to solve problems
3. Pictorially and physically manipulate light. This means being able to position mirrors and lenses to re-direct and focus light.
4. Differentiating virtual and real images by meaning, from calculations, and ray diagrams.
5. Explain the consequences when waves interact with each other and with objects with different penetrance

**Material and equipment needed**

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| --- | --- | --- | --- | --- | --- |
| laptop | projector | 1 videos | optics package | lens/mirrors | flashlight |
| powerpoint | notes prepared |  |  |  |  |

**Assessment Plan:**

**Formative -** Inquiry questions discussed in class and worksheet handed in this class or next class

**Hook and Introduction**

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| --- | --- | --- | --- |
| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10:15-10:20 | * Yummy Yi video | * Refraction link * Can do this before bell to save time |  |

**Development**

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| --- | --- | --- | --- |
| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 10:20-10:45am | * Quiz | * Count down timer |  |
| 10:45-11:05 | * Refraction | * Principle * Snell's law * Critical angle * Why is a diamond so shiny? | * Student try an example |
| 11:05-11:15 | * Go over lab | * Show them some of the equipment * How do use the semi-circular tray? * Make sure they know what they're doing on Weds | * See below |
| 11:15-11:30 | * Play with optical equipment | * Light filament, convex lens, plane mirror, black dividers |  |

**Closure**

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| **Time** | **Activity** | **Teaching notes** | **Assessment** |
| 11:30-11:35am | * Bill Nye | Video, if have time can show PhET simulation  Unit test: April 9th  Lab next class  Tues - Review  Thurs - Unit test |  |

What is that image I see

Is it real

Or virtual

Is it up side down or is it right side up